

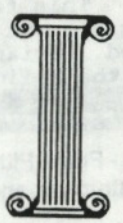
# HULL BUSTERS

2-93



FLUEGEL, ROBERTS & PITTELLI PLAN 1993

## President's Column



International R/C Warship Combat Club

### Commander's Column:

Sorry to miss an issue of the Hullbusters for the Commander's column but things have been a bit hectic around here with my employer downsizing and all. I still work for Westinghouse but now in a diminished capacity and on night shift. But enough about my personal problems.

I have asked MAG for inputs for the "recruiting video" which was assigned to the board for this years project. I got from them an outline which I will share with the national organization. The suggestion was to open with the "News" video from the '90's nationals here in Maryland, then a series of sinking ships on video. Voice over on the sinks will explain what is going on. The next segment would be a spokesman for the History of the organization followed by video on the ships subsystems: Hull, guns, propulsion, pumps, radio, and control methods. Then a set of maneuvers (voice overs telling correct and incorrect moves). An explanation of one on ones and then fleet action. Next a series of errors such as aground and out of control with the final segment of interviews with Captains in the hobby. How does it sound??? Comments to Marty Hayes, 1113 Crestview Dr., Annapolis, Md. Once the video is assembled, we can talk to someone with the right editing and dubbing equipment.

What to do for the winter: 1) make that new killer ship 2) take the old one apart and rewire it - I'll bet there were some changes put in during the season that are not as neat as the original job was. 3) invest some time in improving the sub-systems of your ship. 4) recruit some new members and help them with their ships. 5) form a local club of model boat people (not necessarily only combat people). 6) talk to your local hobby shop about doing some kind of show to let people know you (and us) are around.

MAG now has about 14 members - 12 of them battlers - plus about 5-6 auxiliary members from neighboring states and is still the largest local club of R/C combat sailors in the IR/CWCC. Recently some people have asked how we grew and how we keep our members, so I thought that I would take a little paper and try to explain what we do and why.

One thing we do that I think helps a lot is that we have a regular monthly meeting (come what may). This gives our members a chance to get together and exchange ideas and get "pumped up" by what others are doing. It also allows us to show new members examples of what they are getting into.

Secondly, we have working meetings on weekends during the winter. We have mass produced guns, pumps, insulated my garage (our meeting place), made obstacles for a steering course, etc. at these meetings in the past.

Third, we have put on shows for the public at selected opportunities: Chesapeake Appreciation days (Static Warships, Active scale and Sail boats), Annapolis Maritime, sponsored two precision scale courses, done mall shows, and participate in local and not so local scale events. In short, we do not hid our light under a bushel - we go out and actively spread the word that we are around.

I guess my final word is that we are still about the same size organization as we have been for the last 4-5 years, although many of the faces have changed. We need to retain our older members as well as gain new ones. The hobby is too shallow to do that in the long run unless the local area can provide some of the meat to fill out the carcass. Geering up for one to three events each year does not generate enough enthusiasm to keep the independents going year after year. In the main those who have stayed are active in other fazes of the hobby than just building and fighting a warship. The preceding message was a paid political announcement.

Don't forget that Frank and his committee are working on the new streamlined equivalent for the campaign game. Ideas for consideration should be sent to Frank Pittelli, 33 Wäeliner Dr. Edgewater, Md. 21037.

## Blow-by-Blow



## Battle Reports

### Spring Southeast Regionals

by  
Lief Goodson

Spring was in the air on the afternoon of April 24th in Baxley, Georgia as battlers arrived for the Southeast Spring Regionals. It was a pleasantly warm afternoon as captains from as far away as Maryland, Illinois and Wisconsin speed tested their boats and renewed old acquaintances. Bart Pervis was a super host and had prepared a near perfect battling site. However, a crisis of great magnitude had developed. The Maryland Attack Group (MAG) had claimed all lakes north of the Florida state line as

their own, and freedom loving captains from several states had arrived to dispute this blatant breach of international law. The battle was set, MAG against the WORLD!

The MAG fleet boasted 10 captains with all except one having vast combat experience. The World fleet had 13 captains with just a couple of their captains battling for their first time. However, eight of the World fleet's captains would be going into battle with new, non-combat proven ships, while this was true for only three of the MAG captains. Spirits were high as all captains met at the local Chinese restaurant for dinner and a captains' meeting. At the captains' meeting it was agreed that the four cruisers should not all be on the same fleet. So it was agreed that a volunteer from the World fleet would battle on the MAG side. Unfortunately, all the World captains were so outraged at the MAG's claim on sovereign territory that none volunteered for the "honor" of serving with the MAG forces. The World fleet then returned to Bart's house to plan strategy, while the MAG fleet went back to the motel for their planning session.

Saturday morning had the following World captains ready for battle.

USS North Carolina - Greg Wilson would lead the World fleet with his new six unit battleship. Armed with five guns and a pump, Greg was ready for revenge against the MAG(got) invaders.

USS Alabama - Don Cole was their with his "best of scale" contending battleship with four guns and two pumps.

DKM Bismark - Yours truly was their with my "as of yet not complete" German battleship armed with four fixed guns, a bow rotating turret and a pump.

USS Pennsylvania - Bart Pervis, our host, had his five unit battleship looking and working real good.

HMS Marlborough - Tom Jass's brand-new five unit battleship was looking as clean and neat as his previous ships.

HMS Tiger - John Jass had a new hull for his consistently "best of scale" award winning four unit battlecruiser.

HMS Invincible - Steve Baker's super-maneuverable four unit battlecruiser with its rotating turret was showing more freeboard than last season.

Sevastopol - Mike Elledge had his CO<sub>2</sub> powered four unit Russian battlecruiser ready with its rotating center turret.

USS North Dakota - Mike Smith's four unit, CO<sub>2</sub> powered, WWI battleship was having reliability problems and wouldn't make it into the first fleet battle.

IJN Mogami - Charlie Griffin had his three unit Japanese heavy cruiser working well.

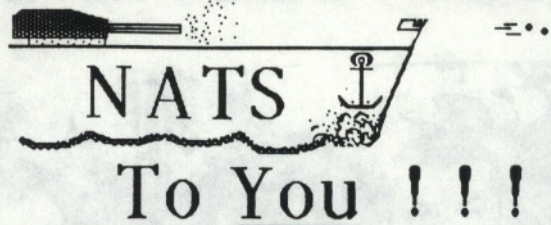
USS Oregon City - Buddy Friend was ready with his large, colorful, three unit heavy cruiser.

USS Miami - Robert Keaton would be participating in his first major combat event with his three unit Cleveland class cruiser.

DKM Prinz Eugen - After visiting several Nat's battles, Ronny Hunt was ready for his first battle with his good looking heavy cruiser.

The MAG fleet would have all ten of its captains ready for the morning battle.

USS Washington - Paul "Doc" Broring had his new six unit battleship brightly painted for its combat debut.



I hope all of you had a wonderful holiday season. I did. All shipyards for new ships should be in full swing. I like this cool weather for ship work. How about helping some rookies out and write about what your doing? Plus we all usually learn something new from what each other are doing.

My job has been made a little easier by both admirals and I being in Texas. Dirty and Jim are open minded and easy to work with. We will be working out changes in campaign to make it easier to play and or more fun. If you have any ideas about campaign please call, tape, or write one of us so we can change or incorporate your ideas, if it will make campaign easier or better.

Well it's time again to pay your Hullbusters and membership fees. Six dollars goes to Fluegel and six dollars goes to Ron Thibault. Also it's time to start saving and or sending in your NATS fee. It's \$85.00 and a \$15.00 late fee if you don't get in by May 30th. This fee includes all meals. If you bring a guest Friday night an extra \$8.75 is needed. Brian is settling the arrangements with the Holiday Inn. We'll give you an exact

Roma - Frank Pittelli brought his six unit battleship, but forgot its superstructure and had to fashion some on Friday night.

IJN Nagato - Will Montgomery had his 24 second, six unit battleship looking very scale.

HMS Warspite - Marty Hayes's five unit battleship was beginning its fourth combat season.

USS Maryland - Danny Schultz had his five unit battleship, veteran of many seasons, loaded with dyed BB's.

USS California - Steve Andrews brought his very seasoned five unit battleship.

HMS Tiger - Due to a frequency conflict, Jim Kantor would be fighting Doc's Tiger instead of his HMS Malaya.

Gangut - Francis Rogowski had his four unit Russian battlecruiser in prime form.

SMS Lutzow - Mike Blattau had his four unit WWI battlecruiser ready for team tactics with his brother, Nathan.

SMS Derflinger - Nathan Blattau had his four unit WWI battlecruiser ready to defend the MAG Tri-Pac claims of superiority.

#### Fleet Battle 1 (Sortie 1)

The battle began with captains battling somewhat tentatively. From the video and my recollections it was a very spread out battle with each ship battling several different opponents. Early in the battle the Derflinger and Roma with help from the

price for a week next issue. Also you MUST have a NAMBA membership card to participate at NATS. Last year it was \$40.00. I hope the price hasn't gone up. Send your money to Cathie Galbraith, Executive Secretary 1815 Halley Street, San Diego, CA. 92154; 619-424-6380. Do it early because it sometimes takes awhile for them to send them out. Also I suggest you send a money order because last year they held my check for 6 months.

Their will be a form in this issue for sending in your money. Also be sure to fill out the information about your ship's length, width, weight, and your radio channel. I want to get rid of all frequency conflicts BEFORE everyone gets to NATS. We all want to battle, but I am going to give priority to the people who get their money in first, and, or try to follow the old Axis/Allied frequency list. This doesn't mean that if you don't pay early or don't follow the old Allied/Axis list you won't battle. It means that if pay late and, or your on the wrong frequency it will be up to you to get it straightened out. As everyone knows who has been to NATS people are very willing to help you out by letting you use their crystals or radio so you can battle. No one wants to build a ship, spend a lot of time and money to get to Nats to find out they can't battle. It hasn't happened, and it won't happen. I will send a copy of the old Axis/Allied frequency list to anyone who needs one. Just send a SASE to me and I'll send it right out. If you have an idea how solve this on going problem of the narrow bands vs. wide bands, Axis/Allied, and air vs. land. talk to me. Or bring it up in Hullbusters, or the Friday rule meeting. We need to once and for all resolve this problem. Thanks!

One more thing I've had to do is change the ribbons. The executive board gave me the

okay to it. The reason we changed is because we had to rely on Dan Hamilton to drive to an Army Surplus store to get them. Dan has been very nice in doing this for us in the past few years. I appreciate his time and effort. He can get them get the ribbons fairly cheap, but it takes a while for him to get them. The ones he gets are obscure in availability. It's nice that way because you can't go out and just buy them at any PX. I'm really kind of surprised more people don't wear their ribbons. I'm proud of mine. I think the change in ribbons will be good. Different and brighter colors will make the new and old ribbons stand out better. One more thing about the ribbons. We will have them for you at the dinner, or rules meeting that night. A few NATS ago the ribbons were never handed out. That's too bad. I hope that never happens again.

I also enjoy seeing people dress up at the dinner. I'd like to encourage other captains to dress up. The Axis have the shown to be superior in this and other areas of being a true gentleman. I put it to the Allies to dress up or put up at the dinner. It will make your meal at NATS more fun and memorable. It's sort of like Halloween in July. Plus it fits our wonderful hobby, and the nice people in it. It makes for fun and good pictures too.

As always, call tape, or write me if you have any problems, questions, or ideas. Thanks!

Wade Koehn  
*Wade Koehn*  
 1251 Wicrest Apt. 103  
 Houston, TX. 77042  
 713-952-3078

Washington pursue John Jass's Tiger. The Tiger gives it back but is out-gunned and is pumping hard in a few minutes. The North Carolina goes after the Nagato, but the Nagato gets the best of the exchange. Meanwhile, the Tiger tries to flee and is caught by the Gangut and sinks. While John is in the water retrieving his ship, the Miami, which is dead in the water in the middle of the pond, sinks. A long time passes without finding the sunken Miami. The CD (Tom Jass) declares the first sortie over, and efforts to find the Miami continue with Mike Blattu donning a wet-suit and tanks to search the bottom of the pond. At the end of the first sortie, two World ships have been sunk and several others are heavily damaged as the scores indicate. Those heavily damaged include Invincible (605), North Carolina (655) and Sevastopol (395). The Maryland is the only heavily damaged ship on the MAG fleet with 695 points.

(Sortie 2)  
 The North Carolina becomes a prime target right away with special attention from the Nagato. There is no clear victor in this initial exchange. Next the Warspite puts in its broadsides. Then the Washington comes to add its broadsides, but ends up eating multiple stern gun volleys. The two Russians are battling when the Sevastopol tries to chase the Gangut and takes several waterline hits from the Gangut's stern gun. The Roma directs the continued attack on the North Carolina. Without explanation the California sinks close to shore followed shortly by the Sevastopol. The sortie is only five minutes old. The MAG fleet, lead by the Washington and Roma, now start paying special attention to the Pennsylvania. The Pennsylvania holds his own for a while, but then locks bows with the Washington and takes heavy damage. The North Carolina's pump stops and she sinks. Jim Kantor's Tiger is noticed to be very low in the water, when Will tells him to turn on his pump. He stops and pumps and it is a long while before any World ships exploit the situation. Eventually, the Prinz Eugen pursues the Tiger, but he has had time to pump out. The

Nagato and Lutzow then gang up on the Prinz Eugen. Meanwhile, the Pennsylvania is on five, pumping hard, and being chased by most of the MAG fleet. The Warspite gets in a few final shots as the Pennsylvania majestically sinks. The MAG victory has been complete.

The final fleet ship damage was:

<u>World</u>		<u>MAG</u>	
Pennsylvania	2430 (sunk)	Maryland	760
Tiger	1525 (sunk)	Roma	625
North Carolina	2355 (sunk)	Nagato	320
Sevastopol	1810 (sunk)	Derflinger	360
Miami	600 (sunk)	Lutzow	240
Mogami	70	Tiger	150
Oregon City	150	Washington	295
Prinz Eugen	510	Warspite	130
Marlborough	250	Gangut	230
Bismark	195	California	450 (unsea-wothy)
Alabama	600		
Invincible	<u>1120</u>		
	11,615		<u>3,530</u>

Inasmuch as the first battle seemed a little one-sided, it was agreed to let the fleet admirals pick fleets in the hopes of getting two equally balanced teams. The second and third fleet battles would be fought between the following two teams:

GREG'S FLEET

- Pennsylvania
- Tiger (Jass)
- North Carolina
- Derflinger
- Lutzow
- Oregon City

FRANK'S FLEET

- Maryland
- Roma
- Nagato
- Sevastopol
- Tiger
- Washington

# MO Notes:

by Steve Milholland  
and James Foster



HELLO again, it's time for more news about the upcoming OZARKS SPRING BB FESTIVAL here in Springfield, MO.

First up, the motel. The most conveniently located motel is the same one used in past events here, the BATTLEFIELD INN, located at 2114 S. Glenstone Ave., Springfield, MO. 65804. Phone is (417) 883-1340. A room with two double beds for two persons is rated at \$ 41.11 per night during May. For each additional person add an extra \$ 2.50 per night. **VERY IMPORTANT !!!!! BE SURE TO MAKE YOUR RESERVATIONS AS SOON AS POSSIBLE !!!!!** Springfield, MO is only 35 miles from Branson, MO, the biggest tourism hot-spot in the country. The major tourist season starts here in late April. This means that ALL motels for miles around fill up very early. If you do not make reservations at least a MONTH ahead you may not be able to stay at the BATTLEFIELD INN with the other battlers and may not get a room anywhere! If you are not sure if you are going to be able to make the contest, I would suggest making a reservation anyway, then if it happens that you are unable to attend, you can call and cancel.

Second order of business, the dates. We had tentatively scheduled this event for the weekend of May 8-9. There has been some concern however about this

being Mothers Day weekend. The other possibility is to have the event two weeks later, on the weekend of May 22-23. This however is the weekend just prior to Memorial Day weekend. This caused concern about people being able to get travel days off just before a major holiday. What to do? How about a poll!

Here's the idea. If you are thinking of attending our fantastic new event, send a piece of paper with your name, address, and phone number with your preference of the two weekends mentioned to:

Steve Milholland  
RT 2, BOX 81-A  
Springfield, MO 65802.      ATTN: BB FEST

Please notify us of your preference with a note on a full size sheet of paper, NOT a phone call, NOT a cassette. Please do so as quickly as possible. Based on the notes we receive we will then make a decision and set it in stone. On or around APRIL 1ST we will be sending entry forms with maps to motel and lake TO THOSE BATTLERS WHO ANSWERED THE POLL. If you do not send a note in to the poll you will still be able to enter later but you won't have much say in the date.

This is really shaping up to be a big contest. With only three exceptions we have heard from every known battler west of the Mississippi river and several from east of the river. All say that they plan to attend. How about you, how can you STAND to miss an event like this? Every battler with class will be here to start the '93 battling season off right. Be there or be square!

Steve and James

P.S. Be sure your N.A.M.B.A. dues are paid up!

North Dakota  
Marlborough  
Bismark  
Alabama  
Miami

Warspite  
Gangut  
California  
Invincible  
Prinz Eugen  
Mogami

With the teams settled, it was time for fleet battle 2. The Miami and California would be unable to participate in this battle.

## Fleet Battle 2 (Sortie 1)

As the battle begins, it is agreed that the Bismark and Sevastopol can come in when their ready. The Nagato closes on the Derflinger, but the Derflinger turns away. It's apparent that neither fleet has any strategy other than 'sink the enemy'. The Marlborough and Invincible square off with sidemounts. Then the Pennsylvania is sandwiched between the Nagato and Gangut. The Marlborough starts pumping steadily and the enemy converge like sharks on fresh meat. Far away, the Derflinger, Lutzow and Tiger (Jass) are mixing it up with the Roma and Washington. The Marlborough is being chased by the Gangut, Nagato and Invincible. The Washington is very low and pumping hard. The Lutzow and Derflinger are on the Washington, while the Nagato tries to defend. It's obvious that the Washington isn't going to make it, so Doc brings her close to shore. The Tiger (Jass) puts in the final shots as the Washington's decks are awash. The Tiger (Jass) now appears to be to pumping hard, but despite calls by the Nagato's captain for his teammates to exploit the situation she just sits and pumps. The Lutzow comes next to the Tiger to defend. The Nagato rams the Lutzow so hard that she loses her superstructure and, in turn, hits the Tiger and sinks her. It's Will's fault, but Mike gets the ram-sink penalty just the same.

Frank (Roma) now directs his fleet to get the Oregon City, but a ram ends this chase quickly. Meanwhile, the Derflinger and Alabama work on the Maryland. The Roma, Gangut and Warspite chase the Pennsylvania and there's plenty of stern gun damage to go around. The North Carolina is now of the Maryland who is moving slow. The Bismark attempts to make up for lost time against the Maryland. Danny (Maryland) asks for, and gets, help from the Gangut. The Bismark and Gangut begin

a fierce broadside exchange that lasts for most the remainder of the sortie. Only the score will tell who's winning the exchange. The North Carolina and Warspite square off. The video tape then cuts off and returns to find the North Carolina pumping hard. The Prinz Eugen gets caught close to shore by the Pennsylvania. The North Carolina and Roma have a brief exchange as the battle winds down. The final BB exchange is between the Bismark and Roma, which ends when the Roma runs out of BB's and speeds away. The sortie ends with lots of damage all around.

## GREG'S FLEET

Pennsylvania	510
Tiger (Jass)	300
North Carolina	305
Derflinger	70
Lutzow	230
Oregon City	150
North Dakota	90
Marlborough	260
Bismark	570
Alabama	125
	<hr/>
	2610

## FRANK'S FLEET

Maryland	480
Roma	190
Nagato	210
Sevastopol	N/A
Tiger	180
Washington	1330 (sunk)
Warspite	435
Gangut	800
Mogami	110
Invincible	390
Prinz Eugen	<u>235</u>
	4360

## (Sortie 2)

The second sortie wasn't on the video. I remember the Tiger (Jass) went on five right away but sank away. I (Bismark) pursued the Gangut until she was under, but took a lot of damage in the process. The Invincible pounded the lifeless North Dakota under the waves. The Pennsylvania battled most of the enemy fleet until she went down. Poor pumping sent the Nagato to the bottom early in the sortie. The battle ended with everyone feeling that it had been a very close battle, which the scores indicated. The total damage was:

## GREG'S FLEET

Pennsylvania	1745(sunk)
Tiger (Jass)	1150(sunk)
North Carolina	600
Derflinger	295
Lutzow	240
Oregon City	230

## FRANK'S FLEET

Maryland	530
Roma	260
Nagato	1670(sunk)
Sevastopol	285
Tiger	630
Washington	1330(sunk)



GROSSADMIRAL FLUEGEL--AFTER HIS RETIREMENT PARTY

North Dakota	1700(sunk)	Warspite	465
Marlborough	410	Gangut	1920(sunk)
Bismark	1140	Mogami	170
Alabama	415	Invincible	845
		Prinz Eugen	260
	7925		8365

Although Frank's fleet had more damage, they still won the battle due to fewer ram penalties, 150 vs. 1600. The final score was 7,775 to 6,765.

### Fleet Battle 3 (Sortie 1)

Fleet battle 2 was so even that everyone agrees to keep the same teams except that the Oregon City and Prinz Eugen switch sides and Steve Andrews runs Doc's Tiger, while Jim Kantor runs his Malaya. Sunday is cold but sunny with a constant breeze that makes for rough seas in the middle of the lake. The first sortie begins with Frank mustering his fleet for an all out assault on the Bismark. The Invincible is among the first to bring his broadsides to bare and comes out ahead in the exchange. The Nagato then picks up where the Invincible leaves off. The Bismark and Nagato go side to side for a few minutes far from shore. Meanwhile, the Marlborough goes out of control between the Washington's and Warspite's sidemounts. The Mogami attacks a group of battleships and get more than she bargained for. The Roma and Gangut are staying on the Bismark and moving close to shore.

After 5 years with 3 solenoids and 2 poppets in my ships, I have decided to go with all solenoids. The poppets are cheaper, lighter, more efficient, and smaller. The solenoids have no linkages, save space, and are slightly more reliable (?), so I guess they win. (Chris's comment - solenoids also offer higher available power, especially at the high rates of fire available with electronic firing.)

Using Freon, the KIP U27-1112-13-6 volt has been good, but the catalog seems to recommend the "06 Polyurethane" seal for CO2. "Primarily used for high load applications involving noncorrosive gases and oils. Especially good for high-pressure gases prone to absorption such as CO2. Not recommended for water, acids, or chlorinated solvents." The sales person said the "01 Buna" seal is also good. I have been using the "08 Teflon" seal and have liked it. But, with CO2, I guess the 06 seal may be the best. So I am ordering the U27-1112-06-6 volt solenoids.

In Texas, Hapeco is the KIP distributor (817) 551-1191, in your state, you may want to call KIP and ask who their distributor is. KIP's number is 1-800-722-5KIP.

I ordered three additional 06 seals (that's what they call them, we all call them seats) in case the CO2 messes up my 3 old solenoids seals. The two solenoids with three extra seals cost approximately 60 dollars.

Often in real warfare and in R/C combat, victory or defeat can be determined by an unexpected event. This event was about to happen. As the Bismark, Roma and Gangut came closer to shore, both the Bismark and Gangut ran aground. The Roma was the first to take advantage of the situation by casually unloading fifty two volllies from her dual stern guns into the starboard stern quarter of the Bismark's hull. You can actually count the volllies on the video. While no one on Greg's fleet assisted the Bismark or exploited the Gangut's situation, the Warspite and in turn, the Invincible pounded the Bismark with stern guns. Finally, the Derflinger and Lutzow arrived, not so much to aid the Bismark, but to destroy the Gangut. The Derflinger parked next to the Gangut and unleashed a flurry of broadsides into the Gangut's hull until all her ammo was expended. Efforts by teammates to push the Gangut off the sand bar were of no avail. Sometime during this carnage the Nagato succumbs to damage and poor pumping and sinks near the stranded ships. While all this is happening, on the other side of the lake the rest of Frank's fleet is apparently battling with the Tiger (Jass) who barely survives the sortie. At the end of this sortie Greg's fleet has three ships hurt badly: Bismark (1135), Marlborough (835), and Tiger (585). In addition to the loss of the Nagato, Frank's fleet has the Gangut with 1275 points of damage.

### (Sortie 2)

The second sortie finds the Gangut, Marlborough and Bismark going on five right away. The Gangut cleverly runs into a clearing in the weeds against shore to sit out her five minutes relatively unmolested. The Bismark however, heads for deep (choppy) water which proves to be a fatal error as she sinks near shore with much of Frank's fleet after her. At the other end of the lake Jass's Tiger is trying to get the Gangut but the Tiger (Andrews), and Sevastopol defend. Shortly thereafter, the Tiger (Jass) sinks. A brief exchange is seen between the Invincible and North Dakota (this later results in the North Dakota sinking). The Miami is moving slow and attacked by the Washington then the Invincible. Soon the Miami is dead in the water and drifting towards the weeds near shore. The Washington is pummeling her again. Somehow the Warspite gets caught in the weeds just next to the Miami. The Derflinger exploits this situation, followed;

by several attempts by the Alabama. Next, the Maryland does a good job of blasting the Miami with stern guns, followed by the Sevastopol with a rapid succession of broadsides. The Miami comes off five and the battle fans out. The Lutzow chases a hurting Sevastopol until the Sevastopol goes under, and the battle winds down. Greg's fleet lost three ships in this sortie to one from Frank's fleet. The final damage was:

GREG'S FLEET		FRANK'S FLEET	
Pennsylvania	385	Maryland	280
Tiger (Jass)	1745(sunk)	Roma	770
North Carolina	640	Nagato	1405(sunk)
Derflinger	445	Sevastopol	1325(sunk)
Lutzow	665	Tiger (Andrews)	555
Prinz Eugen	225	Washington	330
North Dakota	1325(sunk)	Warspite	1030
Marlborough	835	Gangut	1355
Bismark	2525(sunk)	Mogami	395
Alabama	320	Invincible	300
Miami	410	Malaya	125
		Oregon City	395
	9550		8265

Frank's fleet won by a score of 9350 to 7965. After the battle came the awards.

Frank Pittelli (Roma)	S.E. Traveling Trophy
Paul "Doc" Broring (Washington)	Class 6 - High Point
Danny Schultz (Maryland)	Class 5 - High Point
Francis Rogowski (Gangut)	Class 4 - High Point
Ronny Hunt (Prinz Eugen)	Class 3 - High Point
John Jass (Tiger)	Best of Scale
Paul "Doc" Broring (Washington)	Most Feared
Michael Blattau (Lutzow)	Special "Diver" Award

#### Some Statistics:

There were a total of 16 sinks in three fleet battles, or 2.67 sinks per sortie. The number of sinks per sortie fought for each class are:

Class 6	.11
Class 5	.13
Class 4	.21
Class 3	.05

Many thanks to our host, Bart Pervis, for what many have called the best S.E. Regionals ever!

### SOUTHEASTERN REGIONALS WILL BE HELD APRIL 17-18

Please note that April 17-18 is the correct date for the Southeastern Regionals sponsored by the Georgia Attack Group. Other months have inadvertently been listed in error in past Hullbuster's calendars but April is the proper month. The location will be Baxley, Georgia, Bart Purvis will be the site host, Paul Broring will be the contest director and the objectives of the game will be sinking ships and having fun.

Our motel will, once again, be the Pine Lodge Motel, Tel. (912) 367-3622. Rooms will be around \$35 plus tax. Give them a call and set up your reservation as soon as possible. Your \$12 entry fee will include soft drinks at pond side and Saturday and Sunday lunch. We will have two fleet battles Saturday and one fleet battle Sunday morning. After Sunday's awards presentations we will have informal individual battles or a free-for-all fleet battle. So, get your new construction completed or tune up USS OLD SOGGY and let's play peace through superior firepower with our warships. If you need maps or more information contact Bart at Rt. 7 Box 465, Baxley, GA 31513, Tel. (912) 367-7306.

We will be playing in a slightly different manner at SE Regionals this year. Careful scrutiny of the ram rules shows that we have not been playing according to the rule as written. Please note that the ramming ship does not come off the water at the time of the ram. It does not cease firing at the time of the ram. It does not cease being fired upon at the time of the ram. None of the preceding are required of the ramming ship unless and until ram damage is being repaired on the rammed ship. Then, and only then, is the ramming ship required to be removed from the water! Most likely, this won't make a major change in our battling styles but it does give an opportunity to reduce the use of the ram rule as a defensive weapon. Please read and familiarize yourself with the ram rules so that we can play with a minimum of confusion in April.

Drive safely, don't try to smuggle any possum across the Georgia state line and let's have a full and fun-filled battle this spring.

## Blow-by-Blow Battle Reports

### THE LAST JEWEL OF THE TEXAS TRIPLE CROWN by:

Wade Koehn

It was the last battle of the Texas Triple Crown. After the waxing the Axis had taken the previous two conflagrations Fluegel referred to it as the Texas Triple Crime. A decade of dominance for Axis in Texas had ended. After the chaos at NATS where the Axis were AGAIN outnumbered and out-gunned, the Texas Axis would try to regain the upper hand. So often at NATS the Axis have been triumphant it seemed that maybe again they could pull one off. Alas the Axis lost. The two earlier TTC's looked like Moe, Larry, and Curly for the Axis. They hoped the ensuing pie fight would find the Allied with custard and cream cheese on their faces. Allied and Axis came to Houston. Allied forces were Chris Pearce piloting the Queen Elizabeth. Chris was back in his element with a more maneuverable ship vs. the mammoth Vanguard. Jim Pate with the Indiana. Jim's fast-firing, hard hitting guns commanded the respect and concern of the Axis. Brian Craven and the South Dakota. Brian's good looking and reliable S.D. would have an advantage. They would be well rested since battle would be minutes from his house.

Axis pride were as follows: Mr. G, aka Gerald Roberts sported the Abakuma. Gerald gave the Allies fits trying to detain or strike the Abakuma. Would Gerald wade out into the sea and clear a canal or obstruction for the Abakuma to hide/fight-around? Dirty Dave Haynes and the Kongo. Dirty's do or drown at the last sortie of NATS was the Kamazie cunning that put fear into the Allies.

RULE PROPOSAL - Superstructure Ram  
Damage.

By: Greg Wilson, Don Cole, Steve Baker, Bart Purvis  
Buddy Friend.

We propose that superstructure ram damage be ELIMINATED for fighting ships only or not count if your superstructure is not bolted down. POINT IN CASE: Points are only scored in the hull area designated in the rules. Thus if you ram this area and damage it a ram penalty should be assessed.

Now, if you blow a hole in somebodies superstructure or shoot off a turret there are no points assessed for these holes. Also, some battlers don't bolt down superstructure parts and have them sitting precariously on the hull so that if a ram occurs thats not hard enough to damage the hull it will surely knock some part of the superstructure loose. In battle ships bump and knock each other all the time, Its part of the fight unless you want to call a ram to check your ship. If no ram damage occurs you just send it back out. Now we think that this should still count on convoy ships since the idea of these ships is not to touch them at all. So the reason for the propasal is to stop knocking battlers out of the trophy race because of a shifted turret or because somebody doesn't bolt their decks down and it shifts 1/8" and they have you penalized for it and here you are with a great day of battling, scoring many points for your team, maybe even sunk somebodies ship on your own and WHAM!! 50 points for superstructure and no recognition because of this. Lets keep the points and ram damage to the hull. If it is knocked loose, call a ram, bring it in and fix it. Its not going to sink because your turret is knoked loose or your deck shifted a little. If you consider this shift jeoperdizing your water tight integrity then bolt it down. It couldn't be water tight other wise. If this is not to everybodies liking then lets start building the superstructure penetrable so this area can really start counting for something. Not to get some extra little points.

and gained the IJN respect everywhere. Wade Koehn put his former Louisiana Loveboat, Lutzow, on the water. Wade finally got some respect from the Allies and Axis. His boat was no longer the Rodney Dangerfield of the hobby. Seventeen units in three ships, vs., nine units in three ships were the battle lines. The Axis would be outgunned. Some things never change.

The first sortie found the Axis on the defensive. Abakuma attacks the Indiana in the starboard rear staying clear of the stern guns. The Kongo and Lutzow circle the Q.E. looking for an opening. S.D. is aiding the chase of the Abakuma. The Kongo is harassed by the Q.E. and the Indiana. Soon the Kongo is listing. A faulty pump turn-on switch causes the Nip ship to say sirahnara. All three Allies turn on the Lutzow. The Abakuma tries to distract the capital ships from the Lutzow; like a rodeo clown does a bull from a fallen rider. Q.E., S.D., and Indiana make a meal of the Lutzow. Abakuma bites the capital ships on the ankle while they deliver bolo punches to the Lutzow. The Lutzow fights back, but is out numbered and out gunned. The remaining Axis head for the high seas and lick their wounds.

Out of kindness of their hearts, and no one else to battle, the Allies allow Dirty back in. The Allies threw the pies. The Axis cleared their eyes from the custard.

As the second sortie began the Allies felt fat and pleased with themselves. Having

Rule Proposal: Add Oregon City  
as a separate class

By Buddy Friend, Greg Wilson,  
Bart Purvis, and Charlie Griffin

After talking to John French, he was able to get some information. We discovered that the Oregon City was actually not a member of the Baltimore class. It was going to be along the same lines, but was quite a different ship. It was originally designed to carry four float planes, in a hangar, but this was never built in due to lessons learned by torpedo damage. More A-A guns were added, and more watertight bulkheads were also added.

The Oregon City hull was heavier than the Baltimores, with more armament and fuel oil. Comparative displacements are as follows:

	Standard	Full Load
Baltimore:	13881	17031
Oregon City:	14835.4	17985.3

Considering this knowledge, we would like the Oregon City (and its sisters) added to the ship lists at their correct displacement and class. The information is from the Naval Academy Museum.



beat on the Axis unmercifully.

Impaling herself on a stick the Q.E. had her superstructure sitting at a cock-eyed angle. Luckily for her it didn't fall off or otherwise she would have kissed bottom. The Abakuma rams the Q.E. and give her a big hole. After patching the Q.E. pursues the Lutzow with her side mount and connects. The Kongo seeing the Q.E. being entranced pounding on a cruiser sneaks in and unloads his side mount. This activates the Q.E. pump. Chris's natural hazards gives him his own predicament.

Surviving on the other side of the lake the Abakuma slips into her usual shallow water trench. Running in and out of the logs the Abakuma trys to elude the South Dakota. Brian gets a few shots in but he steps into the goo. This gives the Abakuma the stroke of luck it needed to escape. Unfortunately for the Abakuma the Indiana was waiting on the other side to bear down hot and heavy. The Abakuma hides out amongst the logs and calls five. All of the Allies gang up on the Kongo and Lutzow. The Kongo and Lutzow team up alongside the South Dakota. The S.D. pump abates and with little damage she sinks. The Indiana gets a few grade a shots in on the Lutzow. All of the sudden the Kongo is listing and sinks due to pump turn on failure. The Lutow stern guns them for some points and calls five and runs. Battle carnage for battle one is as follows:

Kongo	1815	Q.E.	535
Lutzow	975	South Dakota	1395
Abakuma	405	Indiana	135
	3195		2065

From : The Florida Task Force  
 To : The Readers of HullBusters

We recently, got together for a Sunday afternoon of fun, and some business. Our fun consisted of, Greg Wilson's North Carolina and Mike Elledge's Savestepol. In a battle of the Titans.. The two ships were fueled and armed. They were then launched, to engage in mortal combat.

As the battle continued, both ships were putting up a fierce fight. Although, the Savestepol received the greater damage. The North Carolina was the one to sink. This was largely, due to pump failure. But for the satisfaction of the hardcore combatant, yes a sink, is a sink. In any regards.

Now on to business.

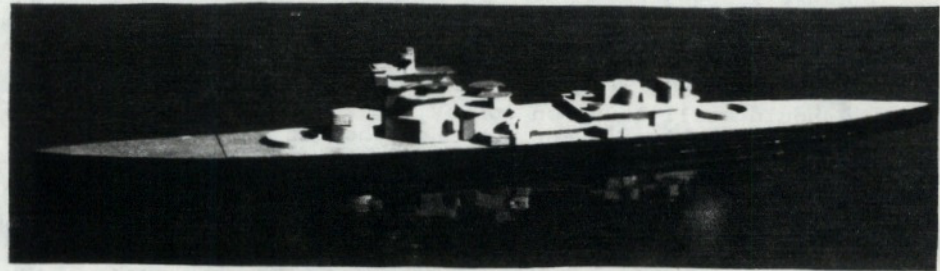
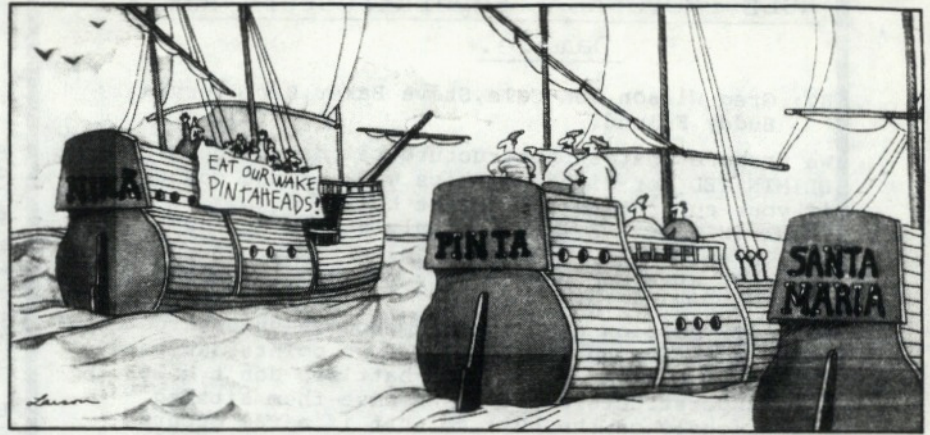
We held the elections for our F.J.F. Officers.

As follows;

Pres. Mike Elledge  
 Vice Pres. Greg Wilson  
 Sec. Buddy Friend

And the new position opened to me:  
 Correspondent to HullBusters Robert Keeton  
 So folks expect to hear more from the F.J.F. 144th

Coarespondent  
 Robert  
 Capt. H.M.S..Sheffield  
 (Unfinished)



WHO's ship is that? WHAT is it?  
 WHEN was this taken? WHERE is it?  
 WHY did he build it? HOW? Exactly.

We all retreat to Brian's house for a extraordinary meal prepared by Brian's wife; Colleen, and Jim's wife; Malinda. Thanks lady's! A few beers, some boat work, and lights out.

Sunday's first sortie finds the Axis on the defensive with stern guns facing the flying V of the Allies. All three of the Allies concentrate on the Kongo. The other two Axis ships endeavor to distract the Allied assault. Eventually Jim can't ignore the Lutzow and Abakuma and veers to attack.

The Q.E. and S.D. impede the Kongo. The Indiana frays with the Lutzow and Abakuma. The Kongo gives as much as she takes. Unfortunately she taking it from two ships! Abakuma's gun is having problems. The Lutzow now has to stand back since it's not getting any help from the Abakuma's gun. This causes the Lutzow to trade a single stern gun for either dual or triple sterns. So the Lutzow plays a start and stop game to pound the Indiana. The Indiana turns well so she just keeps making circles to make the Lutzow eat stern. Abakuma goes on five. Kongo runs to point her stern at her fows and fires. Kongo and Lutzow team up for a few minutes; and the call five. The Allies win that sortie.

The closing sortie for the Texas Triple Crime finds the Axis having lost almost every sortie and battle for the '92 season in Texas. A sad year for the Axis. Hats off to Allied fleet. They have had an outstanding comeback in '92, after getting pummeled for many years. Congradulations Texas Allies!

The Axis decide to give an all out effort this final sortie. The Allies have a capacious lead and are content to attempt more of the same. Navy of the Nips try to tap dance on the Q.E. The Q.E. defends herself with help of the South Dakota. The Nips are in close quarters on either side of the Q.E.

.....The first sortie, second battle began by Dirty getting rammed by the South Dakota. This caused Dirty's automatic pump turn on switch to fry. It looked like Dan Hamilton's old smoke from electrical connectors. Dirty's switch was pulled and put in a new one. Lutzow takes advantage of the Indiana's only one gun working and puts a few holes in Jim. The Abakuma exchanges blows with the Q.E. and they come out about even. South Dakota and Q.E. team up on the Lutzow and make Wade's life diffault. Jim calls five since his guns aren't working. Abakuma and Lutzow mix it up with the South Dakota and Q.E. Allies win 855 to 2350 for the Axis.

Saturday's finally sortie finds the Axis getting aggressive to try to turn things around. Jim's Indiana finds the Lutzow being stupid behind his stern and makes Wade pay. Dirty and Mr. G. double team the Q.E. Chris fights back and gives more or less as much he takes. Fortunately for the Allies Brian is Chris's wingman and dishes out to the two ships pounding on Chris. Jim and Gerald tango in Texas for a while with Gerald racks up points below the waterline shots, while Jim volley's with his triple sterns. The Kongo pays a heavy price for her ferocisty. 72 above the waterline mark her hull. The Kongo cools her jets. The IJN and German navy combine to attack Jim and Brian. Chris chases the pumping Kongo. Axis do better, but still get beat bad. Axis 1300 to Allied 2805.

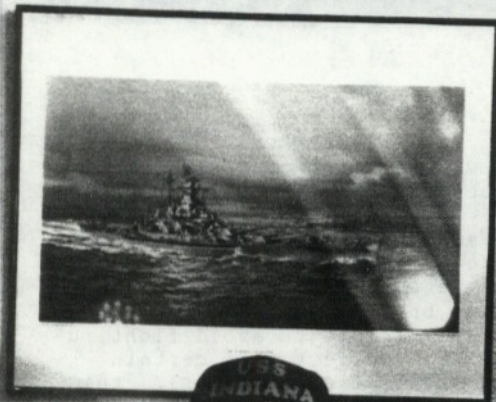


They get in a few below the waterline; and the Q. E. returns the favor. Japs jugernuat turns it attention to the S.D. Brian being more defensive minded stern guns the invaders. Kongo and Abakuma catch up to Brian. The worm turns. Now Chris helps Brian get rid of the yellow swarm.

Meanwhile on the other side of the lake the Indiana and Lutzow are duking it out. Apparently resuming hard feelings from the previous battle. Jim chases Wade with his sidemounts. Wade knowing he's faster takes off in front of Jim to try to stern gun his bow. Jim gets in some sidemounts, and Wade gets in a few sterns in Jim's bow. This constant closing and weaving continues. Wade tries to brush Jim off by going on the port side of a wooden pole. The Lutzow come too close to the pole and vegetation growing on the pole gets entangled in the Lutzow oversized props. Turning props of the Lutow sucks under the doomed ship. Jim seeing the quandry of the Lutzow tries to add insult to injury by passing close to sinking ship and add a few hole below the waterline. The Lutzow sank quicker than the British fleeing Rommel. ALL combantants stand and watch the Lutzow sink. The Japs empty thier guns and call five. Chaos is as follows:

Kongo	750	Queen Elisabeth	405
Lutzow	1230	South Dakota	250
Abakuma	<u>1390</u>	Indiana	<u>530</u>
	3370		1185

The Allies sweep the Texas Triple Crown (Crime)! A new trophy is handed out this year for the Texas battlers. The Most Feared Battler in Texas is voted on. Jim Pate wins it; and rightly so. Jims guns kept many Axis at bay. There should be a picture of Jim holding the TTC, Most Feared NATS Allied, and Most Feared Texan trophies right here.



I got a new subscriber from California and wants some explanations of the rules. I told him a tape, but a not so new member asked me for some explanations. I'm not a sea lawyer, but I need to create some "print" for H.B. Som maybe I can start it and you guys can maintain it. My hope is that a fleet and campaign rule would simply be printed, maybe with some interpretation. you may have some favorite that you would like to bring awareness up on? I currently don't, but will pick two and get the ball rolling

**FLEET:** 1992 Rules, "Battle Conduct" 6. "Between sorties, water may be removed from a ship's hull, but battle damage may not be repaired."

I'm glad I found this one. There is a certain Texan who pushes his b-b hole balsa splinters closed with his finger between sorties. His defense is that "Another 'Old Salt' has always done this." I think that he's (they're) wrong. This column is fun!

**Campaign:** 1992 Rules, "Points Awarding" page 15 C.5. "The captains are then awarded points by multiplying this number by their total earned weights factors."

About these earned weight factors, it's on the same page, C.2. "Each captain can gain an additional weight factor for each portion of any hour he has his ship on the water." Tell me more, oh rule book! "Only one factor is allowed per hour irrespective of the number of missions embarked on during that hour. The recommended way of recording this is for his Fleet Admiral to give him a different colored poker chip (or other type of chip) (Buffalo) for each factor earned. (A color for hour one, another for hour two, etc.)"

My California friend, and the rest of you head scratching rookies, we don't follow all the rules. We want to, but with Campaign rules, it's convenient to let the Admirals split the points. This isn't right, but we haven't really figured out all the rules ourselves. Just show up and do what you're told, it will be fun, and that's good enough for now.

And another thing from Chris: While typing in rule proposals, I sensed that there is some confusion about how we score battles; i.e. why do we score between battles, and do ships get points for sorties and battles they don't participate in etc. (Some went so far as to propose that "A ship can only collect points for the battles it is in".)

Rest assured, friends, this one is already in the rules. If you'll look in the rules (I'm too lazy to at the moment), you'll discover that ships are awarded points based on the individual sortie they participate in, not just by fleet battle. The reason we score between sorties is so that if a ship sinks, or withdraws after the first sortie and doesn't participate in the second, it doesn't receive any points for that sortie. For example, if Bob and I are battling Fred, and Bob withdraws after the first sortie. Let's say Fred takes 600 points in the first sortie and 400 in the second, and Bob and I each have identical ships. When the scoring is done, Bob and I each get 300 points for their efforts in the first sortie, but I get all 400 points for the second sortie, because Bob did not participate. The result is that I get 700 points, Bob gets 300, and Fred gets whatever he gets. Since I participated in both sorties, I got more points.

This is why we score ships between sorties. Since we do the same thing between battles, I think we can all see that a captain and his ship are only awarded points for the battles and sorties which they participated in.

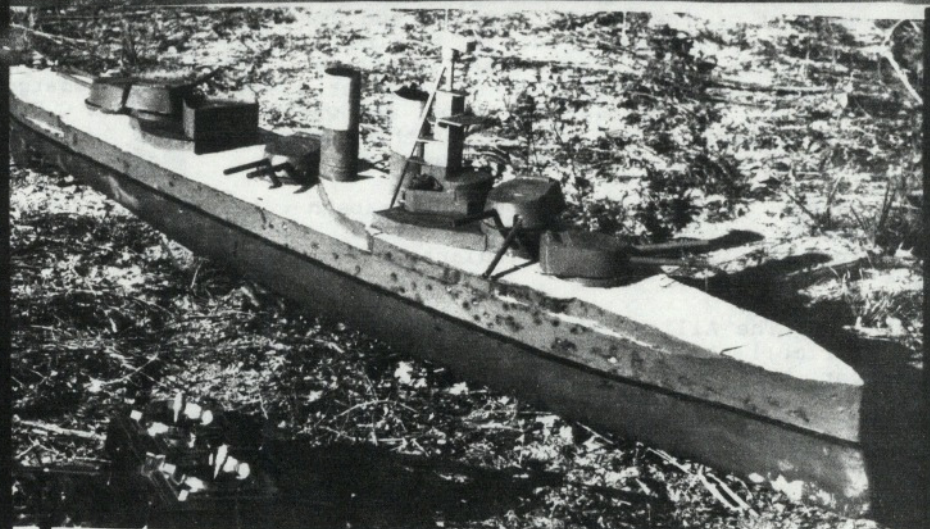
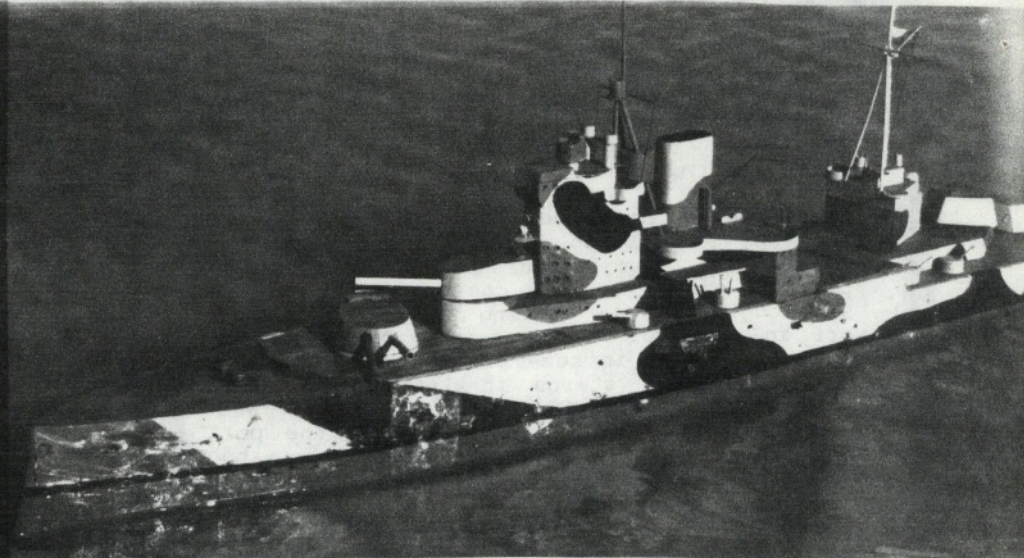
## PUMP OUTLETS:

BY GREG WILSON

I decided to do some study on this subject for one reason, like everybody else I am always looking for some way to make things better.

I have supplied a diagram above with each outlet numbered 1 thru 6. These are the best tube outlets to use. When I first started in this hobby I was told that the only way to go was with the tapered tube. It supposedly was the best flowing outlet. Well, this is what I found after talking and working with the Engineers in this area. First, look at the diagrams above. Next to each diagram is a discharge coefficient number or in easier to understand words, How much of the hole diameter in percent that is used in each orifice or tube design. Diagram #5 has the best coefficient but look at the diag. It is a short tapered hole. If you used what is pictured it would be hard to set up your ship for this kind of outlet, but in reality we use a longer tube that is tapered.

According to the Engineers at Boyle and HWH Engineering, when this is done, something happens (lengthening the tapered tube). Now I did bring a pump with me that pumped well with the standard outlet on it for them to look at and try so they knew how they worked. They explained that with this outlet, with the amount of pressure that our pumps produce, the coef. of the tapered outlet actually drops. After waiting 30 minutes for them to finish the calcs!!!! The reason the pressure drops is because of one thing. The more pressure against the tapered hole the more you create a tornado effect. He turned on my pump and told me to look at my stream. When you really look at it you will see a dimple just past the exit hole in the water stream. The reason, he explained to me, is the water starts to spin coming up through the tube because of the taper. The more pressure you put on the stream the worse it gets. He also explained that in a tornado there is an air space in the middle of the tornado so that is why you get the dimple in the stream. also after more calculations the discharge coef. drops due to the air hole thus you no longer have use of the full dia. of the hole. the coefficient drops to 0.73%, a loss of hole diameter of 0.25%. NOT GOOD. After all this work he came up with an outlet that would work better. He said to look first at diagram #2. The tube flows full but the discharge coefficient is 0.73%. He explained that it was due to the flat outlet surface which made the stream burst or spray out the hole. Now he said to look at diagram #6. A discharge coefficient of 0.83%. This is due to the stream hitting a flat surface first then discharging but without the stream bursting out the hole the coefficient was raised. So he said, lets put the



### Action Report; Allied Maneuvers Iron Duke Vs. Queen Elizabeth Written by: Captain Clark

This report will consist of a biased viewpoint of an observer on the bridge of the Iron Duke.

The opening maneuvers of this action began with the Iron Duke gallantly pursuing the cowardly QE. As the Duke closed the QE refused a manly exchange of broadsides instead opted to turn away in a feeble effort to avoid fighting on even ground. After collecting a certain number of 15 inch shells (as souvenirs), the Iron Duke opted for a differently strategy. A stern to stern battle developed, however the QE still refused to battle in the approved manner. Instead, using long range broadsides and stern guns, the captain of the QE admitted by his avoidance of real battle that his vessel was not ready for such. Knowing that his vessel could never catch the fearful QE (take that anyway you want to) the captain of the Iron Duke tried to engage similar tactics, however Y turret was having gun problems (wee guns). Iron Duke then gambled on a risky maneuver, steering straight into the shell fire and closing to bear B turret, however again a gun malfunction occurred and Iron Duke only got off a few shots. Now pumping and damage crews working Iron Duke decided to withdraw so that repairs could be effected to guns.

The scores were not tallied after the first sortie, however while Iron Duke had more new port holes than QE, it was apparent some captains had true fighting spirit and others where laking (not true but fun to claim)

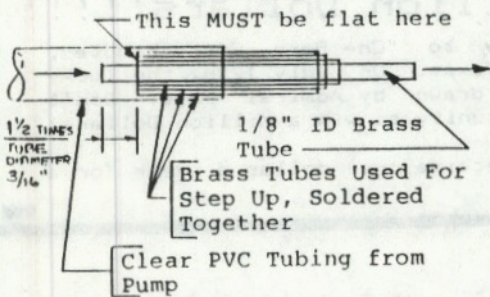
The second sortie began with both battleships sitting again stern to stern. Again

(2)two of these outlets together. (SEE DIAGRAM AT THE END OF THIS ARTICLE). After more calculations the discharge coefficient would be 0.98.3%. Another words, you use 0.98.3% of the hole diameter no matter how much pressure you put on the outlet tube.

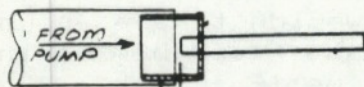
**REASON COEFFICIENT GOES UP:**

Diagram #2 brings the actual diameter of the tube back towards the stream thus not allowing the tornado effect to start. Using diagram #6 in conjunction with diagram #2 you eliminate the stream bursting or spraying out of the outlet. Thus with both #2 and #6, you get a full smooth stream all the way out the outlet. Thus you use 0.98.3% of the outlet. As he explained nothing is perfect so give or take a few tenths here or there. I built an outlet like what is shown in the diagram and he was right. The dimple in the stream dissappeared and the time it took to pump (1) one gallon actually dropped a couple of seconds. The stream also looked thicker which he explained was due to using more of the hole diameter.

**DIAGRAM:**



Depending on the size of the plastic tubing you use will depend on how many brass tube step ups you use.



**SIMPLE WATER SENSOR THAT IS CHEAP AND WORKS!**  
BY GREG WILSON

THIS IS MORE OF A REMINDER THAN A NEW PRODUCT. I HAVE BEEN USING THIS FOR 1.5 YEARS NOW AND HAVE NOT HAD ANY MAJOR PROBLEMS WITH IT. ONLY ON THING NEEDS TO BE DONE WITH IT TO KEEP IT IN TIP TOP SHAPE. CHANGE THE COPPER PC BOARD EVERY FEW MONTHS. IT SEEMS TO GET CORRODED AFTER THIS AMOUNT OF TIME IF YOU USE YOUR SHIP ALOT. IF YOU DON'T THEN SPRAY IT EVERY ONCE AND AWHILE WITH WD40 TO KEEP IT CLEAN OR SOME OTHER EQUAL. I WILL EXPLAIN THE PC BOARD LATER IN THE ARTICLE.

THIS SYSTEM WOULD WORK GREAT FOR ROOKIES OR VETERANS SINCE IT IS VERY RELIABLE. IT CAN ALSO BE USED IN CONJUNCTION WITH A MECHANICAL TURN ON SWITCH.

**HOW TO:**

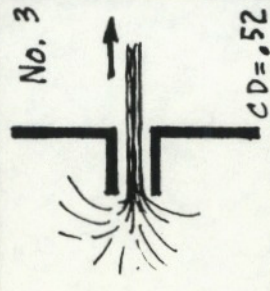
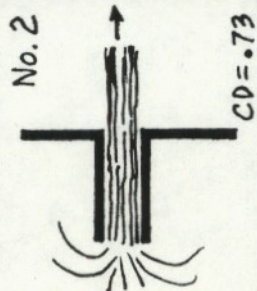
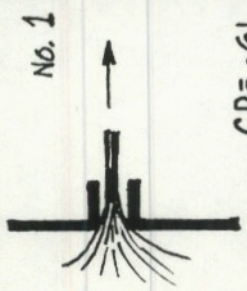
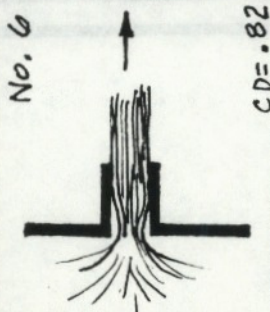
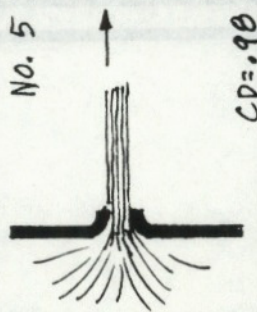
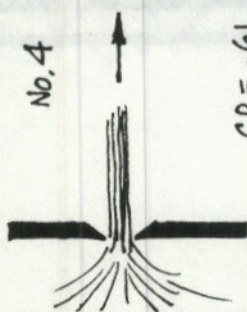
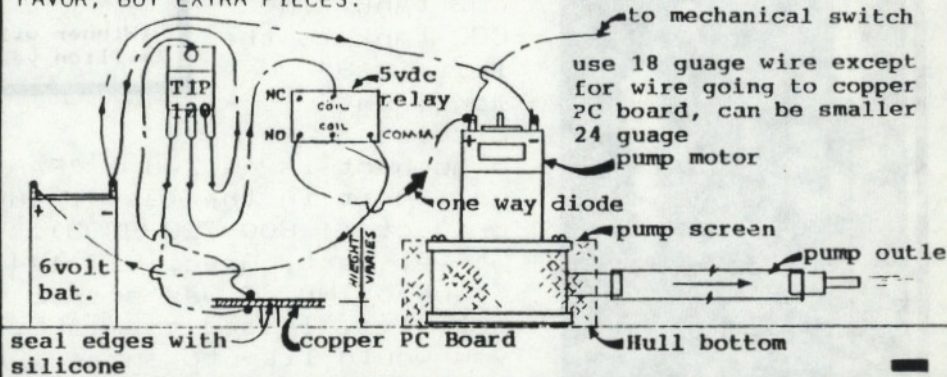
**PARTS THAT ARE NEEDED;**

1. RADIO SHACK TIP 120 (RATED 8 AMPS)
2. RADIO SHACK 275-243 (SUBMINI 5 VDC PC RELAY RATED 2 AMPS)  
FOOT NOTE: THERE ARE OTHER HIGHER AMPERAGE RATED RELAYS ON THE MARKET AND CAN ALSO BE USED. IT MUST BE RATED 5 VDC FOR 6 VOLT BATTERIES OR 12 VDC IF HIGHER VOLTAGE BATTERIES ARE USED.
3. COPPER PC BOARD (COPPER PLATE EITHER SIDE WITH PLASTIC SEPERATOR).
4. 6 VOLT BATTERY (CAN RUN RIGHT OFF YOUR DRIVE MOTOR BATTERY OR A SEPARATE PUMP BATTERY)
5. PUMP WITH MOTOR (EITHER OF THE FOLLOWING: 4.8v,380,385 OR 6v MABUCHI MOTOR. I THINK THESE ARE THE LOW AMP DRAW MOTORS BUT IF YOU USE A HIGHER DRAW MOTOR FIND THE HIGHER AMPERAGE RATED RELAY)

NOW ALL YOU NEED TO DO IS LOOK AT THE SCHEMATIC TO SEE HOW TO PUT IT TOGETHER. EASY ISN'T IT ! AND IT WORKS !

THERE ARE ALSO WAYS TO PUT IT TOGETHER SO YOU CAN PLUG THE TIP 120 AND THE 5VDC RELAY IN AND OUT WITHOUT RESOLDERING WIRES ON AND OFF ALL THE TIME WHEN YOU CHANGE PIECES.

IMPORTANT NOTE! ALWAYS KEEP SPARE PARTS. NOTHING AND I REPEAT NOTHING IS PERFECT AND WON'T BREAK DOWN, SO DO YOURSELF A FAVOR, BUY EXTRA PIECES.



- No. 1 Short tube with square edged entry
- No. 2 Re-entrant tube (l = 2.5\*D)
- No. 3 Re-entrant tube (l = 1.0\*D)
- No. 4 Sharp edged orifice
- No. 5 Orifice with well rounded entry
- No. 6 Short tube with square edged entry

**Battle's Calendar**

Mar.	25th	Deadline for Apr. Hull Busters
April	late?	Unsanctioned Battle, Houston?
April	17-18	Southeast Regionals, Baxley GA Sanctioned? Call Bart 912-367 4101
May	???	Northeast Regionals
May	8-9	Springfield MO. Sanctioned!
		<b>OR</b>
May	22-23	Call Steve or James for data.
May	???	Unsanctioned Battle - Texas
May	25th	Deadline for June Hull Busters
May	29	\$85 received to Brian or Wade for Nats ( \$15 late charge if later).
July	12-16	1993 Nationals - Houston, TX
July	17	Axies celebrate another victory!

and again Iron Duke attempted to back down on QE and fire X turret however QE was Cowardly avoiding. At the same time QE attempted a similar maneuver but in a cowardly way (what ever that means). Also the QE's advantage in turning was beginning to be noticed more as Iron Duke became sluggish due to excessive souvenir collecting. Soon, however, it became apparent that while Iron Duke had collective tendencies the crew on QE had become fearful and could no longer load their guns (their captain claimed they were out of CO2). The QE then called 5 and ran to the middle of the lake, Iron Duke attempted to give chase however the large number of open ports in bow limited speed and it was not possible to close. The Iron Duke attempted to skip a few into QE but she was too nimble, and Iron Duke called it five too.

At the end of the battle the hits on the "Cowardly" QE were 35-5-16 (1275) and injuries suffered on The Iron Duke was 86-10-22 (2210). As can be seen from these scores the crew of Iron Duke had more souvenirs to take home and where therefor the winner.

**ALLIED LOTTERY!**

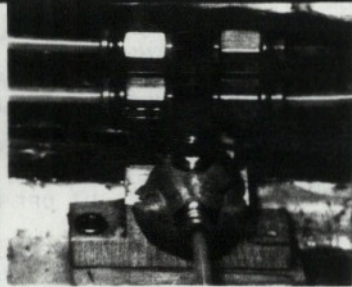
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**CONCLUSION**

The above photo is my manifold to operate 5 guns from one CO2 tank. The CO2 tank to the left is 9" long. The middles

component is called a "FAST MAX", not a fast trax, like I called it in the last issue. The Fast Max is a T.A.S.O product (1-800-728-9393). Thanks to Marty, Lief, Wade, Steve, Bart, Greg, FTF 144, and both Chris's for this issue of HB. I was scared that I wouldn't have enough articles. I used them ALL, so please keep them coming! If you would like to subscribe, mail me \$6. Sink ya Later.

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